For BSc Physics (H) 5th Sem

* Write a Scilab program to calculate the velocity of electron in different orbit.

Hint :- $V = \frac{e^2}{2nh\epsilon_0}$, $n = 1, 2, 3$ (orbit)

$e = 1.6 \times 10^{-19}$ C

$h = 6.6 \times 10^{-39}$ JS

$\epsilon_0 = 8.254 \times 10^{-12}$ m/s

Program :-

```
clc
disp ("The value of e, h and
      x is given")

e= 1.6 x 10^-19 ;
h= 6.6 x 10^-39 ;
x = 8.254 x 10^-12 ;
n = 1                    // first orbit
v = (e*e)/(2*n*h*x) ;

printf ("The velocity of electron in
        the first orbit = %f", v);
```

* Write a Scilab Program to calculate De-Broglie's wavelength of the electron

Hint :- $\frac{1}{2} mv^2 = eV$

De-Broglie's wavelength, $\lambda = h/mv = \frac{h}{\sqrt{2em}}$

Where,

$e = 1.6 \times 10^{-19}$ Coulomb

$m = 9.1 \times 10^{-34}$ kg

$h = 6.62 \times 10^{-31}$ Joule-Sec

Program :-

```
clc
e = 1.6 * 10^-19 ;
m = 9.1 * 10^-31 ;
h = 6.62 * 10^-3
lemdba =      h/ sqrt (2*m*e*
printf("\n De-Broglie's wavelen
        of electron is %.f",
                    lembda);
```

* Write a Scilab Program to calculate the number of photons emitted per second, where E = 40, lembda = 6000×10^{-10}

h = 6.63×10^{-34}

* Write a Scilab Program to calculate the number of photons emitted per second, where E = 40, lembda = 6000 x 10^{-10}

h = 6.63 x 10^{-34}

c = 3 x 10^{8}

Program :-

```
n = (E * lembda) / h * c;
printf ("No of photons emitted per Second = %f", n * 10^-19);
```

* Write a Scilab Program to find the Boltzmann factor. where, e = 1.60 x 10^{-19}

Program :-

```
clc
h = 6.6 * 10^-34 ;
v = 1 * 10^7 ;
k = 1.4 * 10^-23 ;
T = 300 ;
n = exp(-((h*v)/(k*T))) ;
printf("\n The Boltzman factor
                is %f Tesla", ;-
```

* Write a Scilab program to find the value of Plancks Constant :

Program :-

```
e = 1.60 * 10^-19 ;
Slope = 4.12 * 10^-15 ;
h = Slope * e ;
printf("The value of Planks Constant
        is %f Joule-Sec", h);
```